



Homework 3

Due: 11:59 PM, Feb 5, 2020

Total score: 10

Program language: C++

Submission: provide source code and your document (docx, txt, pdf) via Blackboard

Suppose the run-time of a serial program is given by $T_{\text{serial}} = n^2$, where the units of the run-time are in microseconds. Suppose that a parallelization of this program has run-time $T_{\text{parallel}} = n^2/p + \log_2(p)$. Write a program that finds the speedups and efficiencies of this program for various values of n and p . Run your program with $n = 10, 20, 40, \dots, 320$, and $p = 1, 2, 4, \dots, 128$. What happens to the speedups and efficiencies as p is increased and n is held fixed? What happens when p is fixed and n is increased?